

C. REMARKS

This Reply is filed in response to the Office Action dated March 23, 2005, in which claims 1, 2, 5, 8, 10-13, 18, 19, 28-30, 32-34, 36, 37, 41, 42 and 57-68 were rejected. Claims 1, 2, 5, 8, 10-13, 18, 19, 28-30, 32-34, 36, 37, 41, 42 and 57-68 are presented by the Applicant for reconsideration and allowance.

I. REJECTION OF CLAIMS 1, 2, 5, 8, 10, 13, 18 AND 19 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER *SULLIVAN* '561 IN VIEW OF *SULLIVAN* '806 AND *SULLIVAN* '760.

Section 1 of the Office Action rejected claims 1, 2, 5, 8, 10, 13, 18 and 19 under 35 U.S.C. § 103(a) as being unpatentable over *Sullivan* '561 (U.S. Pat. No. 5,779,561) in view of *Sullivan* '806 (U.S. Pat. No. 5,984,806) and *Sullivan* '760 (U.S. Pat. No. 5,306,760). Claims 1 is an independent claim, and claims 2, 5, 8, 10, 13, 18 and 19 depend from claim 1.

Independent claim 1 recites a golf ball including a solid center, at least one intermediate layer, and a cover layer. The solid center has a deflection, under an applied static load of 200 lb., of between about 0.090 inches and about 0.150 inches. The intermediate layer includes thermoplastic material. The material includes a co- or ter- polymer of ethylene and acrylic acid, wherein 100% of the acid groups are neutralized with metal ions. The co- or ter- polymer including a level of Magnesium Oleate. The cover layer includes an ionomer or ionomer blend and has a Shore D hardness, measured on the curved surface of the golf ball, of greater than about 70. The golf ball, when struck by a driver club at a clubhead velocity of about 160 feet-per-second, has an initial velocity off the clubhead of greater than 240 feet-per-second.

Sullivan '561, alone or in combination with, *Sullivan* '806 and *Sullivan* '760 does not disclose, teach or suggest the golf ball of claim 1. In particular, *Sullivan* '561, *Sullivan* '806 and *Sullivan* '760 do not disclose, teach or suggest a golf ball including a solid center and at least one intermediate layer wherein the intermediate layer includes a co- or ter- polymer of ethylene and acrylic acid, wherein 100% of the acid groups are neutralized with

metal ions, the co- or ter- polymer including a level of Magnesium Oleate, as required by claim 1. *Sullivan* '561, *Sullivan* '806 and *Sullivan* '760 also do not disclose, teach or suggest a golf ball including a cover layer comprising an ionomer or ionomer blend having a Shore D hardness, measured on the curved surface of the golf ball, of greater than about 70, and a golf ball, which, when struck by a driver club at a clubhead velocity of about 160 feet-per-second, has an initial velocity off the clubhead of greater than 240 feet-per-second, as required by claim 1.

Regarding the intermediate layer including a co- or ter- polymer of ethylene and acrylic acid, wherein 100% of the acid groups are neutralized with metal ions, *Sullivan* '561 discloses a three-piece golf ball, but includes no teaching, disclosure or suggestion relating to the neutralization of 100% of the acid groups in the material used to form the inner cover layer. Rather, *Sullivan* '806 also discloses a three-piece golf ball and includes numerous references to the neutralization of acid groups in the copolymer of the material used in the first or inner layer (intermediate layer) of the golf ball of *Sullivan* '806. In fact, *Sullivan* '806 refers to the neutralization of such acid groups in the inner layer of the golf ball in at least nine (9) different locations in the Specification. Each of these references in the Specification of *Sullivan* '806 list a specific value or range of neutralization of the acid groups of the copolymer used to form the inner layer. In every instance, the value of range of neutralization is well below 100 percent as required by pending claim 1. In particular, the following specific values or ranges are used in *Sullivan* '806 when describing the neutralization of the carboxylic acid groups of the inner cover layer: "approximately 10-75%, preferably 30-70%" (Col. 11, lines 10-14); "59% neutralized" (Col. 12, lines 20-22); "30-70% neutralized" (Col. 12, lines 38-40); "approximately 30 to about 70 percent of the acid groups neutralized ..." (Col. 12, lines 49-51); "neutralizing the copolymer to the extent desired (i.e. from about 10% to 90%)" (Col. 14, lines 7-11); "[t]he extent of neutralization is generally from about 10% to about 90%" (Col. 15, lines 53-55); and "[t]he carboxylic acid groups of the copolymer are partially neutralized (i.e., approximately 10-75%, preferably 30-70%)" (Col. 17, lines 40-42).

In Section 1, Page 3 of the Office Action, ignoring the repeated disclosure and teaching of *Sullivan* '806 regarding the composition of the inner cover layer, the Examiner

makes reference to a single line of the Specification's description of the outer cover layer, and attempts to apply this single line reference to requirements for the intermediate layer of the golf ball of claim 1. The single reference in *Sullivan* '806 referring to the outer cover layer states: "[t]he carboxylic acid groups of the copolymer may be totally or partially (i.e., approximately 15-75 percent) neutralized." Col. 18, lines 34-36. *Sullivan* '806 not only makes this statement in reference to the outer cover layer of the golf ball, but *Sullivan* '806 never includes a percentage value defining this statement. *Sullivan* '806 never teaches or discloses 100% neutralization of carboxylic acid groups. Given the state of the art of golf ball design at the time of filing of *Sullivan* '806, the reference to "totally" neutralized likely refers to the maximum neutralization used in the art at that time, which was approximately 90%. 100% neutralization was not known at the time of filing of *Sullivan* '806. To one skilled in the art, a common ionomer (as described by *Sullivan* '806) with no modification additives cannot be processed at 100% neutralization. At 100% neutralization, such ionomers will not flow and are unworkable. *Sullivan* '806 provides no further teaching or disclosure that would indicate that the word "totally" would mean anything other than approximately 90% neutralized to one of ordinary skill in the art. Accordingly, *Sullivan* '806 fails to teach, suggest or disclose a golf ball including a solid center and at least one intermediate layer wherein the intermediate layer includes a co- or ter- polymer of ethylene and acrylic acid, wherein 100% of the acid groups are neutralized with metal ions.

Sullivan '760 golf ball cover compositions and describes a cover of a golf ball formed of a material having carboxylic acid groups of a copolymer that is partially neutralized (approximately 15-75%). *Sullivan* '760 is not only not directed to an intermediate layer of a golf ball, but in describing an outer layer, it lists a conventional neutralization range.

Regarding the level of Magnesium Oleate in the intermediate layer of the golf ball of claim 1, none of the cited references disclose or teach this requirement of claim 1. Magnesium Oleate is one of the important components of the construction of the golf ball of claim 1 because it is the component that facilitates the flow of the co- or ter- polymer of ethylene and acrylic acid with 100% of the acid groups neutralized with metal ions. Without Magnesium Oleate, or an equivalent material, 100% neutralized acid groups would be unable

to flow and be unworkable. The Office Action refers to *Sullivan* '760, but *Sullivan* '760 is directed to the cover layer of a golf ball and not to an intermediate layer. Further, *Sullivan* '760, and the other cited references, do not teach, disclose or suggest the use of a co- or ter-polymer of ethylene and acrylic acid with 100% of the acid groups neutralized with metal ions.

Sullivan '561, *Sullivan* '806 and *Sullivan* '760 also fail to disclose, teach or suggest a golf ball including a cover layer comprising an ionomer or ionomer blend having a Shore D hardness, measured on the curved surface of the golf ball, of greater than about 70, and a golf ball, which, when struck by a driver club at a clubhead velocity of about 160 feet-per-second, has an initial velocity off the clubhead of greater than 240 feet-per-second, as required by claim 1. Section 1, Page 2 of the Office Action relies on *Sullivan* '561 and its reference to a golf ball having an outer cover layer with a Shore D hardness of at least 60. The Office Action then states that because "the structure of the golf ball has been met (which it has not) being struck by a driver club at a club head velocity of about 160 feet-per-second and an initial velocity off the clubhead of greater than about 240 feet-per-second is inherently [met] by *Sullivan* et al."

This Statement, however, is misplaced. First, a golf ball having an outer cover layer with a Shore D hardness of 60 or even 65, cannot produce the 240 feet-per-second initial velocity requirement. A golf ball's initial velocity when struck by a clubhead of a fixed speed (160 feet-per-second), is dependent (at least in part) on the hardness of the cover layer of the golf ball. A golf ball with a reduced hardness value (such as a Shore D of 60) will significantly deform upon impact deadening the response of the golf ball off the clubhead. A golf ball having a cover layer with a Shore D hardness value of 60 simply will not produce the required velocity of claim 1. Golf balls including outer cover layer having Shore D hardness values of approximately 60 are equivalent to high spin balls, which are designed to deform and produce increased spin upon impact, not necessarily exceptional distance or high velocity. The reference in *Sullivan* '561 to a cover layer having a Shore D of at least 60 is a broad statement encompassing most golf balls. It does not disclose or identify the significance of producing a golf ball having a cover layer with a Shore D hardness value of greater than 70.

Further, the golf ball constructions disclosed and taught by *Sullivan* '561 do not inherently result in constructions that result in the Shore D hardness and initial velocity requirement of claims 1. Inherency requires the missing content to be necessary. *Southern Clay Products, Inc. v. United Catalysts, Inc.*, 43 Fed.Appx. 379, 388 (Fed. Cir. 2002). Inherency may not be established by probabilities or possibilities. *Id.* "The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Southern Clay Products, Inc.*, 43 Fed.Appx. at 388 (citing *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999)). It is not necessary for the golf ball constructions disclosed and taught by *Sullivan* '561, or the cited art, to provide a golf ball that exhibits an initial velocity off a clubhead of greater than 240 feet-per-second, when struck by the clubhead of a driver at a velocity of about 160 feet-per-second, or that exhibits a coefficient of restitution of greater than about 0.785 at a test velocity of 175 feet-per-second. Therefore, it is not inherent, that the golf ball constructions of *Sullivan* '561 will result in the required velocity value. *Sullivan* '561, and the cited art, are devoid of any disclosure, teaching or suggestion indicating that the COR, initial velocity, values will necessarily result from the structure of claim 1.

Accordingly, Applicants respectfully submit that independent claim 1 is patentable over *Sullivan* '561 alone, or in combination with, *Sullivan* '806 and *Sullivan* '760 for at least the reasons stated above. Additionally, Applicants respectfully submit that claims 2, 5, 8, 10, 13, 18 and 19, which depend from claim 1, are also patentable over *Sullivan* '561, *Sullivan* '806 and *Sullivan* '760 for at least the same reasons.

Further, in reference to dependent claim 2, which adds the limitation "the golf ball has a coefficient of restitution of greater than 0.815 at a test velocity of 150 feet-per-second, Section 1, Pages 3-4 of the Office Action states that *Sullivan* '561 discloses a golf ball having a coefficient of restitution ("COR") of at least 0.750 with a test velocity of 125 +/- 5 fps. The Examiner also states that "COR is linearly related to the velocity, it is submitted that the golf ball of *Sullivan* et al. has a COR of greater than 0.815 at a test velocity of 150 fps." The Examiner's assumption is false. Although COR is linearly related to velocity, the slope of the relationship is negative. In other words, the parameters are inversely proportional. As test velocity increases, COR actually decreases. This relationship results, at least in part, because

as the velocity increases, the golf ball deforms more upon impact, and the energy absorbed by the deformation reduces the golf ball's return velocity, and therefore its COR. Therefore the 0.750 COR of *Sullivan* '561 at a test velocity of 125 fps would actually decrease at a velocity of 150 fps as required by claim 2. Accordingly, *Sullivan* '561 does not teach, suggest or disclose the COR and velocity limitation of dependent claim 2.

Also, dependent claims 10 and 13 include the limitations "wherein the ball has a diameter of less than about 1.680 in." and "wherein the ball has a diameter within the range of 1.62 to 1.65 inches," respectfully. In reference to dependent claims 10 and 13, the Examiner states "[t]he diameter of *Sullivan* ['516] would perform equally as well because it reduces backspin which inherently produces a more balanced golf ball." This statement is also misplaced. The amount of backspin produced by a ball is determined by the ball's material construction, not its diameter. Further, balance is a static measurement, based upon the density of the ball and its construction.

Still further, *Sullivan* '561 does not disclose a golf ball having a diameter of about 1.68 inches; rather, *Sullivan* '561 specifically discloses a diameter of "at least 1.68 inches." This disclosure of *Sullivan* '561 is consistent with USGA requirements that require a minimum golf ball diameter of 1.68 inches. The golf ball of claims 10 and 13 are outside of the USGA requirements and outside of the disclosure and teachings of *Sullivan* '561. Further, in light of the strictly enforced, well-known USGA minimum diameter requirement for golf ball design, neither the USGA nor a person of ordinary skill in the art would not equate a diameter of 1.68 inches with a diameter within the range of 1.62 to 1.65 inches. The decreased diameter of the golf ball of claims 10 and 13 facilitates the golf ball's high velocity performance.

II. REJECTION OF CLAIMS 28-30, 32, 36, 37, 41, 42 AND 64-68 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER *SULLIVAN* '561 IN VIEW OF *SULLIVAN* '806 AND *YAMADA ET AL.*

Section 2 of the Office Action rejected claims 28-30, 32, 36, 37, 41, 42 and 64-68 under 35 U.S.C. § 103(a) as being unpatentable over *Sullivan* '561 in view of *Sullivan* '806

and *Yamada et al.* (U.S. Pat. No. 5,585,440). Claims 28 is an independent claim, and claims 29, 30, 32, 36, 37, 41, 42 and 64-68 depend from claim 28.

Independent claim 28, recites a golf ball including a core, a mantle, and a cover layer. The core includes a high cis-content polybutadiene rubber. The rubber is synthesized using a neodymium catalyst. The mantle includes a co- or ter- polymer of ethylene and acrylic acid, wherein 100% of the acid groups are neutralized with metal ions. The cover layer includes an ionomer and has a Shore D hardness, measured on the curved surface of the golf ball, of greater than about 70. The golf ball exhibits a coefficient of restitution of greater than about 0.785 at a test velocity of 175 feet-per-second.

Sullivan '561, *Sullivan '608* and *Yamada et al.* do not disclose, teach or suggest a golf ball of claim 28. In particular, *Sullivan '561*, *Sullivan '608* and *Yamada et al.* do not disclose, teach or suggest a golf ball including a core, a mantle including a co- or ter- polymer of ethylene and acrylic acid, wherein about 100% of the acid groups are neutralized with metal ions, a cover layer comprising an ionomer having a Shore D hardness, measured on the curved surface of the golf ball of greater than 70. The discussion above relating to claim 1 are directly applicable to these limitations of claim 28. *Yamada et al.* is directed to rubber compositions for golf balls and does not disclose, suggest or teach the 100% neutralization and Shore D hardness limitations of claim 28. Applicants respectfully submit that claim 28 is patentable over *Sullivan '561*, *Sullivan '608* and *Yamada et al.* for at least the same reasons stated above with respect to claim 1. Applicants also respectfully submit that claims 29, 30, 32, 36, 37, 41, 42 and 64-68, which depend from claim 28, are also patentable over *Sullivan '561*, *Sullivan '806* and *Yamada et al.* for at least the same reasons.

III. REJECTION OF CLAIMS 59-63 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER SULLIVAN '561 IN VIEW OF SULLIVAN '806, YAMADA ET AL. AND SULLIVAN '760.

Section 3 of the Office Action rejected claims 28-30, 32, 36, 37, 41, 42 and 64-68 under 35 U.S.C. § 103(a) as being unpatentable over *Sullivan '561* in view of *Sullivan '806*, *Yamada et al.* and *Sullivan '760*. Claims 59 and 60 depend from independent claim 1 and claims 61-63 depend from independent claim 28. Applicants respectfully submit that

claims 59-63 are patentable over *Sullivan* '561, *Sullivan* '608, *Yamada et al.* and *Sullivan* '760 for at least the same reasons stated above with respect to claims 1 and 28.

Further, with reference to claims 65 and 66, Section 3, Page 7 of the Office Action attempts to apply *Sullivan* '561 in relation to the added limitations of claims 60 and 61 requiring the golf ball to have a weight within the ranges of 47.0 to 48.5 grams, and 48.0 to 48.5 grams, respectfully. However, *Sullivan* '561 discloses a golf ball having a weight within the range of 43.8 to 45.9 grams, well outside the ranges specified by claims 60 and 61. *Sullivan* '561 and the other cited art do not disclose, teach or suggest the weight ranges of claims 60 or 61. One of ordinary skill in the art would not arrive at or select the weight ranges of claims 60 and 61 using *Sullivan* '561 without some teaching or suggestion to do so. Such a teaching or suggestion does not exist in *Sullivan* '561 or the cited art. Further, the Examiner states that the Applicant does not disclose why the weight ranges are critical in order to attain the invention. The weight ranges are a limitation of claims 60 and 61. One of ordinary skill in the art would recognize that a heavier ball (a ball greater than 47.0 grams) will fly longer than a lightweight ball of less than 45 grams. Accordingly, Applicants respectfully submit that claims 65 and 66 are allowable over *Sullivan* '561 and the cited art for this additional reason.

IV. REJECTIONS OF CLAIMS 11 AND 12 AND CLAIMS 33 AND 34 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER *SULLIVAN* '561 IN VIEW OF *SULLIVAN* '806, *SULLIVAN* '760 AND *YAMAGISHI ET AL.*

Sections 4 and 5 of the Office Action rejected claims 11 and 12, and claims 33 and 34 under 35 U.S.C. § 103(a) as being unpatentable over *Sullivan* '561 in view of *Sullivan* '806, *Sullivan* '760 and *Yamagishi et al.* (U.S. Pat. No. 5,779,563), respectively. Claims 11 and 12 depend from independent claim 1, and claims 33 and 34 depend from independent claim 28. Applicants respectfully submit that claims 11 and 12 and claims 33 and 34 are patentable over *Sullivan* '561, *Sullivan* '806, *Sullivan* '760 and *Yamagishi et al.* for at least the same reasons stated above with respect to claims 1 and 28.

Further, *Yamagishi et al.* describes a multi-piece solid golf having a solid core and a cover of at least two layers enclosing the core. The solid core is formed of a rubber base

and has a specific gravity of at least 1.00. The cover is formed of a thermoplastic resin and the cover outer layer has a greater specific gravity than the core or a cover inner layer.

The Office Action indicates that *Yamagishi et al.* discloses a golf ball wherein the core, intermediate layer and cover have approximately the same specific gravity. The Office Action cites *Yamagishi et al.* for the range in the core, intermediate layer and the cover. However, *Yamagishi et al.* does not specify all three layers as having approximately the same specific gravity. *Yamagishi et al.* teaches increasing the moment of inertia of the golf ball by moving as much weight to the outer portion of the golf ball as possible. Thus, in column 2, lines 31-34, *Yamagishi et al.* teaches that the cover outer layer must have a higher specific gravity than the cover inner layer, thereby specifically *teaching away* from the present invention.

Moreover, *Yamagishi et al.* is devoid of any disclosure, teaching or suggestion of a golf ball having a core, a mantle, and a cover layer with approximately the same specific gravity, such that when the ball is rotated in a solution of salt water of sufficient density to support the ball, the ball exhibits no single preferred orientation. As stated in the present application, such balance improves the intended flight and roll path of the ball.


Accordingly, Applicants respectfully submit that claims 11 and 12 and claims 33 and 34 are allowable over *Yamagishi et al.* and the cited art for these additional reasons.

V. CONCLUSION

Applicants respectfully request reconsideration of claims 1, 2, 5, 8, 10-13, 18, 19, 28-30, 32-34, 36, 37, 41, 42 and 57-68 for the reasons stated above. Applicants believe that the present application is now in condition for allowance. Favorable reconsideration under 37 C.F.R. § 1.112 is respectfully requested. The Examiner is invited to telephone the undersigned to discuss any issues in this case in order to advance the prosecution thereof.

Respectfully submitted,

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